

# **Dynamic Behavior of a Pure Fluid At and Around Its Critical Density Under Microgravity**

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A microgravity experiment was performed onboard the MIR space station investigating the dynamic behavior of a pure fluid at and around its critical point. The Alice 2 facility used for this project was made available by the French space agency CNES during the Perseus mission. The self-built test cell's essential feature is a variable volume enabling various density settings in the critical, sub- and supercritical density region ( $-25/+35\% \rho_c$ ) of sulfur hexafluoride  $\text{SF}_6$ . Two different types of experiments were of interest each new setting of the average starting density. One was the observation of the formation of bubbles and droplets during phase transition for various cooling ramps, fast ones between 220 and 500 mK/h and slow ones between 12 and 30 mK/h. The other type of experiment was the measurement of the dynamic temperature propagation and subsequent temperature normalization in the one-phase region after rapid positive and negative density quenches, in the order of 1% of  $\rho_c$  and for various starting temperatures. Some quenches were performed such that the temperature dropped shortly into the two-phase region. Bubbles and droplets could be observed forming and dissolving, leaving behind local three-dimensional density structures. First results and video data will be presented for both types of experiments.